Paper No. 10

Notice of Non-Compliant Amendment (37 CFR 1.121)

The amendment filed on 4/22/03 & RESPONSE 5/12/03 is considered non-compliant because it has failed to meet the requirements of 37 CFR 1.121, as amended on September 8, 2000 (see *65 Fed. Reg. 54603*, Sept. 8, 2000, and *1238 O.G. 77*, Sept. 19, 2000). In order for the amendment to be compliant, applicant must supply the following omissions or corrections in response to this notice.

THE FOLLOWING ITEMS ARE REQUIRED FOR COMPLIANCE WITH RULE 1.121 (APPLICANT NEED NOT RE-SUBMIT THE ENTIRE AMENDMENT):

☑ 1. A clean version of the replacement paragraph(s)/section(s) is required. See 37 CFR 1.121(b)(1)(ii).

☑ 2. A marked-up version of the replacement paragraph(s)/section(s) is required. See 37 CFR 1.121(b)(1)(iii).

☐ 3. A clean version of the amended claim(s) is required. See 37 CFR 1.121(c)(1)(i).

☐ 4. A marked-up version of the amended claim(s) is required. See 37 CFR 1.121(c)(1)(ii).

Explanation: PAGE FORMAT IS NOT PERMITTED. PLS ADHERE TO SAMPLE FORMAT.

(LIE: Please provide specific details for correction to assist the applicant. For example, "the clean version of claim 6 is missing.")

For further explanation of the amendment format required by 37 CFR 1.121, see MPEP § 714 and the USPTO website at http://www.uspto.gov/web/offices/dcom/olia/pbg/sampleaf.pdf. **A condensed version of a sample amendment format is attached.**

☐ **PRELIMINARY AMENDMENT:** Unless applicant **supplies the omission or correction** to the preliminary amendment in compliance with revised 37 CFR 1.121 noted above within ONE MONTH of the mail date of this letter, examination on the merits may commence without entry of the originally proposed preliminary amendment. This notice is not an action under 35 U.S.C. 132, and this ONE MONTH time limit is not extendable.

☑ **AMENDMENT AFTER NON-FINAL ACTION:** Since the above-mentioned reply appears to be *bona fide*, applicant is given a TIME PERIOD of ONE MONTH or THIRTY DAYS from the mailing of this notice, whichever is longer, within which to **supply the omission or correction noted above** in order **to avoid abandonment.** EXTENSIONS OF THIS TIME PERIOD MAY BE GRANTED UNDER 37 CFR 1.136(a).

Bruce Harrison

Legal Instruments Examiner (LIE)

(Rev. 12/01)

lose a significant portion of their initial weight (30-50%) as tars and gases. While a portion of these products can be utilized as a binder and for process heat, the quantity produced using prior processes is generally larger than can be consumed within the facility and, therefore, must be appropriately disposed of or sold to enhance the economic attractiveness of the process. Due to the high cost of processing these by-products and their aromatic nature, they must often be sold as low quality feedstock materials to refiners at low prices.

The present processes take advantage of the fact that coke is very low in volatile matter (1-2%) and therefore produces nearly no pyrolytic products. This process comprises blending coke fines with coal fines in the proper amount to create just enough pyrolytic products required to perpetuate the process.

The mixture of coal/coke fines is cleaned and blended with tar or other fixed-carbon producing binders. The mix may then be formed into appropriate solid shapes. These shapes are then fed to a pyrolyzer, where the temperature is raised to 800-1100°C to devolatilize the solid objects driving off tars and gases and leaving a strong, high carbon-content coke. The gases and tars are cooled to approximately 300°C, condensing the tars, allowing them to be separated from the fuel-rich gas and collected. The tars are then recycled to be used within the process as a binder while the gases are oxidized to provide heat to the pyrolyzer. Calculations indicate that, with, for example only, a mix of 55% coke fines, 30% bituminous coal fines and 15% binder, the amounts of tars and gases generated are appropriate to operate the process in a closed-loop fashion. Of course these proportions will vary under control of one skilled in the art, depending on feedstock properties. At a briquette pyrolysis temperature of 900°C, typical product yields for the various constituents are shown in TABLE 2, below:

costs for a briquetting plant of this size include raw materials costs and processing costs. Raw materials costs are estimated to be in the range of $10/ton for waste coal fines and $20/ton for coke fines. The processing costs for briquetting, which include the price of an additional natural or synthetic binder, are estimated to be around $18/ton, depending on the type of binder.

An FMC formed coke plant, as stated above, uses multiple fluidized beds for char production and a curing oven and calciner for coke production. The processing and capital costs associated with commercial use of the present technology are expected to be much lower than for prior form coke processes, since the char production step is eliminated. Total costs for coke production from the present process are likely to be in the range of $50-60/ton, without requiring the sale of by-products. Current metallurgical coke prices are in the range of $100-120/ton and foundry coke is $140-160/ton.

For a steel plant producing 6,000 THM/day, at an approximate rate of 500 lbs coke/THM and at an approximate cost of $100/ton for coke, the replacement value of the coke normally lost would be about $5.5 million a year. Reduction in the amount purchased, since all the coke is initially used or reclaimed and used, represents another 1% or $0.55 million. With briquette costs expected to be around $50-60/ton, a net savings of $3.3 to $2.8 million/year is expected.

The characteristics of supplemental coke products and cokes made from alternative coking technologies must fall within the strict standards necessary for its intended use. The most stringent requirements for coke are associated with blast furnace use. Metallurgical coke used in blast furnaces must be (1) a fuel to provide heat to meet the endothermic requirements of chemical reactions and melting of the slag and metal, (2) a producer and regenerator of reducing gases for the reduction of iron oxides, and (3) an agent to provide permeability for gas flow and support for furnace burden. Because of the many requirements placed on metallurgical coke, it must meet